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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Guarding Pacific

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A SCIENCE SERVICE PUBLICATION

MEDICINE

Stop Tic Douloureux Pain

Synthetic chemical, stilbamidine, banishes pain of trigeminal neuralgia. Its discovery was almost accidental, American College of Surgeons heard.

► A 70-YEAR-OLD man who suffered attacks of excruciating painful tic douloureux every two months for 17 years has been free of these attacks for 20 months, thanks to a new treatment announced at the meeting of the American College of Surgeons in Atlantic City.

The treatment consists of doses of a synthetic chemical called stilbamidine. Its ability to banish the pain of tic, or trigeminal neuralgia as it is also called, was discovered almost accidentally by Drs. George W. Smith and Joseph M. Miller of the Johns Hopkins Hospital, Baltimore, and the Veterans Administration Hospital, Fort Howard, Md.

They had been using the chemical to treat certain rare diseases such as leishmaniasis and blastomycosis. These patients after a few weeks complained of facial numbness. They had lost the winking reflex and could not taste or feel food in their mouths. After some time more, these sensations disappeared.

Apparently the stilbamidine had hit the fifth nerve as streptomycin hits the eighth nerve. Since the fifth nerve is the one involved in tic, the doctors decided to try stilbamidine as a remedy for the painful ailment.

The first patient, an 82-year-old woman, has had complete relief of her tic pain for 30 months. In all, some 40 patients have been treated. They had, many of them, had previous standard treatments such as alcohol injection into the nerve to deaden it, injections of vitamin B 12 and operations in which the nerve was partially cut.

None of these had given relief for more than a few months, but with stilbamidine they get complete and apparently long-lasting relief. Only permanent relief heretofore available for these patients has been an operation in which the fifth nerve was completely cut.

The numbness and other strange sensation effects of stilbamidine wear off after a few weeks but the pain relief remains. Why is not known. The drug was at first given by injection into a vein every day for 14 days, but now the W. S. Merrill Co. of Cincinnati is making it for Drs. Smith and Miller in capsule form. Patients swallow one of these capsules every day for two weeks.

Stilbamidine's ability to check blastomycosis was itself an almost accidental discovery of Dr. Miller's as reported by SCIENCE SERVICE. (See SNL, Aug. 11, 1951, p. 83.)

A Cherokee Indian had been sent to the Fort Howard VA Hospital with the diagnosis of cancer of the esophagus. Actually, he had been sent there for "terminal care,"

since he was not expected to live, but at Fort Howard it was discovered that he did not have cancer. Instead, he had the rare fungus infection, blastomycosis.

Discussing the case with scientific friends in Baltimore, Dr. Miller learned of a chemical that cleared fungi from culture plates much as penicillin cleared staph. germs from culture plates. This chemical could not be given to humans safely, but Dr. Miller learned of the safe, related chemical, stilbamidine. So he tried that and the blastomycosis patient was cured.

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ARCHAEOLOGY

Vanished Arctic People

► AN ARCTIC seashore village occupied by the vanished Dorset people for at least 2,000 years before the coming of the Thule Eskimos about 1,000 years ago has been explored.

The village contained 208 houses built in terraced rows, overlooking northern Foxe Basin. It is at Alarnerk on the northern tip of Melville Peninsula in Canada, north of Hudson Bay, more than 300 miles above the Arctic Circle.

The village, which is the largest archaeological site yet found in the eastern Arctic, was explored by a joint expedition of the University Museum of the University of Pennsylvania, the National Museum of Denmark and the Arctic Institute of North America.

The Dorset houses were rectangular and quite large, 20 by 45 feet, in contrast to the small round huts that housed their Eskimo successors.

The houses were heated by stone indoor fireplaces and were lighted by small lamps. Although the Dorset people apparently had no boats, they liked to live close to the shore and, when the water's edge receded with the passing years, they built another row of houses on lower ground.

The band of rows is 1,900 feet wide and the tools, weapons and art work found in the various rows indicate about seven different eras. In the houses nearest the present water's edge, the Dorset implements were found mixed with material from the later Thule people.

When the lowest row was built, the water was only 24 feet higher than it is now. During the time the village was occupied by the Dorset people, the sea level dropped about 56 feet.

That is the distance between the highest

• RADIO

Saturday, Dec. 4, 1954, 3:15-3:30 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Linus Pauling, chairman of the division of chemistry and chemical engineering at the California Institute of Technology, will discuss "The Nature of the Chemical Bond."

INVENTION

Pocket Ash Tray Receives Patent

► LEONARD L. BLOCK JR. of Buffalo, N.Y., won patent No. 2,694,400 for a cigarette butter and pocket ash tray that guillotines the lighted end into a metal container. The rest of the butt is then dropped into the metal case, the top closed and the entire container put into the smoker's pocket.

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row of houses and the one nearest the present beach.

Although the sea probably did not recede at a constant rate, it would have taken about 2,000 years for it to go down 56 feet, estimates Dr. Jorgen Meldgaard of the National Museum of Denmark, leader of the expedition.

This gives a rough dating of the settlement at from 1,000 to 3,000 years ago. To provide a check on this estimate, organic materials have been brought back to the University Museum for dating by the carbon 14 method.

The Dorset people lacked the bow and arrow, and hunted with spears, harpoons and lances. They were probably walrus-hunters, the scientists believe, rather than whale-hunters like their boat-building successors, the Thule Eskimos.

Among the nearly 3,000 implements recovered from the site were tools, weapons and artwork made from flint, slate and walrus ivory and also remains of a few wooden implements.

The Dorset people were civilized enough to bury their dead, the expedition found, but the Dorset used gravel mounds unlike the piles of huge stone boulders under which the Thule Eskimos buried their dead.

The expedition also explored some typical Thule houses built from large stones and whalebone, which were found about a mile and a half from Alarnerk. Under one house was found a store of frozen meat which was put down to freeze, by a Thule family several hundred years ago.

Dr. Meldgaard was accompanied by Dr. Richard G. Emerick of the University Museum, and Rev. Guy Marie-Rousellier, ethnologist of Churchill, Manitoba, Canada.

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SURGERY

Halt Cancer Development

A resurfacing operation and injection of radioactive chromic phosphate are aiding fight on cancer. Sky blue dye traces the cancer's growth.

► A RESURFACING operation to check the development of cancer was reported by Drs. John W. Draper and Richard B. Stark of New York Hospital and Cornell University Medical Center, New York, at the meeting of the American College of Surgeons in Atlantic City.

The operation would be for patients who, over the years, had had multiple benign tumors of the bladder. With each recurrence, the doctors pointed out, these tumors become more malignant, until finally they become true malignant cancers.

In the hope of interrupting this usual progression from harmless to malignant tumors, the New York doctors decided to try resurfacing the lining of the bladder with skin. Tried so far in dogs, this resurfacing operation seems to work.

Although there is some loss of elasticity and consequent decreased capacity, no stones formed in the resurfaced bladders and there was no other sign of damage from the operation.

Evidence that the resurfacing operation would check the cancerous progression came when the doctors gave the four dogs with resurfaced bladders a drug called betanaphthelamine. This chemical is known to produce cancer in the bladder. The dogs got the chemical for 24 months, but so far there has been no sign of cancer developing.

For "poor, miserable people at the end of the line" because of cancer of the bladder or cancer of the prostate gland, there is atomic medicine that can make them feel better, although it does not cure the cancers. This atomic medicine consists of injections, by a newly developed electric injector, of insoluble radioactive chromic phosphate directly into the cancer.

This new palliative treatment was reported by Dr. Vincent Moore of the University of California School of Medicine in Los Angeles.

Atomic medicine is helping fight the spread of cancer from its original location in the body to other regions. Using injections of radiogold, Dr. Colin G. Thomas Jr. of the University of North Carolina School of Medicine, Chapel Hill, N. C., followed its course through the lymphatic vessels of the body. These vessels drain lymph and are best known to the layman when they form lymph nodes, or lymph glands.

Tracer amounts of radiogold, injected near accessible cancers of the head, neck and breast, spread rapidly throughout the regional lymph nodes.

If a lymph node had been completely replaced by cancerous tissue, radiogold

could not be deposited in it. But if even a small amount of lymphoid tissue was still there in the gland, radiogold could get in and be swallowed up in the lymphoid tissue.

A sky blue dye that is rapidly taken up by the lymphatic system where no cancer has invaded is being used by other doctors to determine how far cancer has spread and therefore how much tissue must be cut out at operation.

Use of this dye, called direct sky blue, was reported by Drs. Lawrence H. Strug, William Leon and Isidore Cohn Jr. of Louisiana State University School of Medicine, New Orleans.

They inject the dye into the tissues at the time of operation. Within a few minutes they can see where the spread of the dye is checked by the spreading cancer. Much more radical operations than formerly believed necessary should be undertaken, the New Orleans doctors find as a result of use of this blue dye.

In cases of stomach cancer, for example, they now find they may have to remove not only all the stomach but part of the pancreas and all of the spleen, in order to remove all the cancer.

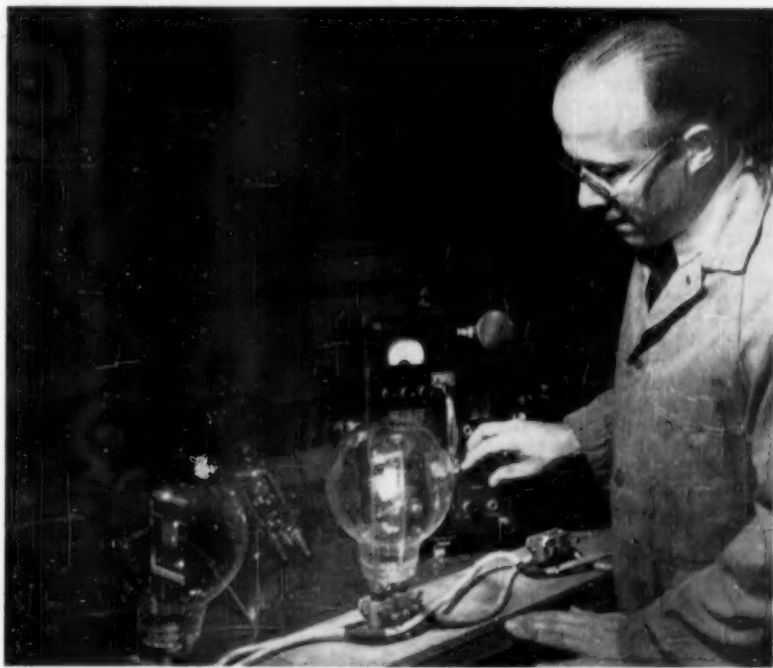
How much tissue needs removing to get all the cancer is also told by use of another chemical, a dark violet powder known as hematoporphyrin. This chemical is injected into the patient's veins about 24 hours before operation.

Then, at the time of the operation, an ultraviolet spot light is beamed on the patient. The cancer tissue glows a bright red, outlining its boundaries and its spread through lymph vessels. Success of this method depends on using very large doses of the violet powder, Drs. D. S. Rasmussen-Taxdal, Grant E. Ward and Frank H. J. Figge of Baltimore reported.

Use chemical cross fire to attack cancer is the suggestion from studies reported by Dr. Daniel M. Shapiro of Columbia University. Four drugs used this way showed promising results in cancers in mice.

The drugs he used were two vitamin antagonists, a purine antagonist and the male hormone. He selected these because they would block naturally weak nourishment pathways of cancer cells. The lower amounts of enzymes in these weak pathways should be easier to knock out fast, with resultant greater harm to the cancer, Dr. Shapiro reasoned.

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LIGHT NOISE—Instead of checking the light output of the 2000-watt light bulb, General Electric engineer Richard Blount measures its noise level. To help television and movie producers improve sound quality, a line of noise-free high-wattage incandescent lamps for studio use has been developed.

SURGERY

Thyroid Transplanted

► **SUCCESSFUL TRANSPLANTATION** of the thyroid gland from the neck of a 21-day-old baby to the groin of a 29-year-old woman was reported by Drs. Julian A. Sterling and Ralph Goldsmith of the Albert Einstein Medical Center, Philadelphia.

Operation to remove the gland from the baby started one hour after the child's death. Five and one-half hours later the major blood vessels of the stem of the gland had been stitched to the blood vessels in the young woman's groin and the final dressing had been bandaged on her wound.

The young woman had had her own overactive thyroid gland removed at another hospital ten years previously. Immediately after this, symptoms of tetany with spasms, tremblings and muscular pains developed.

She had to take vitamins and thyroid extract one to five times a day and calcium salts by injection into veins as often as four times a day. Apparently the parathyroid glands had been removed along with the thyroid. Attempts to correct this by transplanting parathyroid gland, at a third institution, failed.

The grafting of the baby's thyroid was done two years ago, Nov. 21, 1952. Since then the young woman has been well and happy and able to do her own housework. The only medicine she takes is an occasional oral dose of calcium.

"Blue Baby" Rescue

► **AN 11-YEAR-OLD** boy has been rescued from a "blue baby" heart condition, thanks in part to the "unusual courage" of a Navy veteran who, though not a relative, volunteered for a blood exchanging arrangement with the boy.

The blood exchanging is done by a procedure called cross circulation. In this, the donor's blood is pumped from his artery to the patient's artery, while the patient's blood is pumped from his vein to the donor's vein.

This gives the surgeon a chance to open the right ventricle of the heart, which is dry of blood temporarily, and to repair defects such as the blue baby one and others under direct vision instead of by feel.

The cross circulation maneuver has now been used in 21 cases, with the majority surviving. Dr. C. Walton Lillehei of the University of Minnesota Medical School reported. In all but one the donor has been a relative.

However, when the blue baby boy's turn came, no relative had the rare AB blood the child had. The Navy veteran, Howard Holtz, lived in the same town as the child, heard about the case, knew he himself had AB blood and volunteered to be the cross circulation donor.

Associated with Dr. Lillehei in the cross circulation work are Drs. Morley Cohen, Herbert E. Warden, Raymond C. Read and Richard A. Dewall.

Spare Part Surgery

► **NEWEST THING** in spare part surgery, that is, replacing a worn out or defective part of the human body with a new part, is likely to be the grafting of plugs of living tissue into the human heart itself.

Studies looking toward such surgery were reported by Drs. William W. L. Glenn and L. Newton Turk III of Yale University School of Medicine.

They believe that incompetent heart valves, especially the mitral and tricuspid valves, might be repaired better by using tissue from elsewhere in the body.

In their work with dogs, they used a plug of tissue consisting mainly of blood vessels. They passed this through the left auricle of the heart, through the mitral opening and into the left ventricle where it was finally "anchored" by stitching it to the wall of this heart chamber. There it will presumably function as a substitute mitral valve between the two left heart chambers.

If autopsy studies of the 17 surviving dogs show that the grafts lived and functioned up to nine months, the surgeons may dare to try this new spare part surgery on human hearts.

Water Head Babies

► **AN OPERATION** that helped some babies with so-called water heads was reported to the meeting.

The condition is known medically as hydrocephalus. The infants have too much fluid in their brains and, consequently, very big heads that get bigger during their usually short lives.

The operation was designed to help the babies by draining off the excess fluid from the brain into the peritoneal cavity, or abdomen, where it might be absorbed by the tissues.

Rubber tubing is inserted into the brain and carried down under the skin to the abdomen. There it is connected to a stainless steel button that is suspended through the abdominal wall into the peritoneal cavity "like a light bulb in a ceiling." The rubber tubing under the skin is placed in a snake-like pattern so it will be long enough when the child has grown to full size.

Three of the stainless steel buttons have been working satisfactorily for as long as two years. The operation has helped "a small percentage" of patients, Drs. Michael Scott, Henry T. Wycis, Frederick Murtagh and Victor Reyes of Temple University

Medical School and St. Christopher's Hospital, Philadelphia, reported.

Preserve Brain Cover

► **THE MEMBRANE** that covers the brain, called the dura, can be preserved for grafting by the freeze-drying technique for preserving arteries and other tissues.

Success with the method in dogs was reported by Lieuts. William H. Sewell and Douglas R. Koth of the Naval Medical Research Institute, Bethesda, Md.

Dura has been stockpiled at the tissue bank of the Naval Medical School and will be used clinically in the Naval Hospital at Bethesda, Md.

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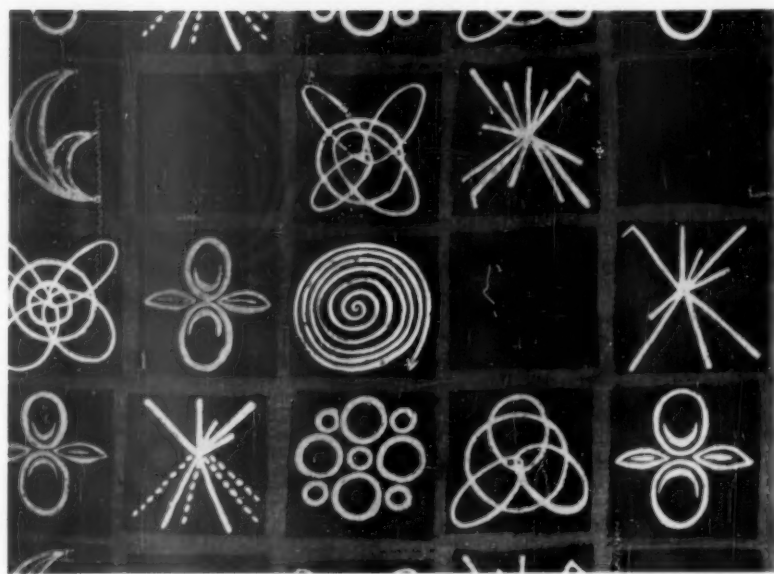
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EXPLODING ATOMS TAPESTRY—Handprinted drapery, designed by the Nobel prize winner, Prof. Theodor Svedberg, founder and head of the Gustav Werner Physics Institute, Uppsala, Sweden. The design shows exploding atoms. The color scheme is cyclamen, orange, Chinese lacquer red on black field, relieved by grey.

GENERAL SCIENCE

Nuclear Textile Design

► **EXPLODING ATOMS** have been drawn as a textile design by Prof. Theodor Svedberg, founder and head of the Gustav Werner Physics Institute, Uppsala, who was Nobel prize winner in chemistry, in 1926.

The textiles are hand-printed draperies designed for public institutions, such as schools, banks, theaters, restaurants and airplanes. They are being shown at Nordiska Kompaniet, Scandinavia's largest department store, Stockholm.

Prof. Svedberg had wanted a drapery for the Physics Institute in Uppsala, but found the textiles on the market unsuitable. He, therefore, designed appropriate drapery himself.

The result is not only original but highly suitable for a physics building. Exploding atoms, in cyclamen, Chinese lacquer red and orange on black squares, are printed on dove-grey coarse linens. Physicists can recognize Bohr's electronic curve, which surrounds the atomic nucleus, and also the spiral of an atomic explosion caused by cosmic radiation and caught on a photographic plate.

After completing the atomic drapery, Prof. Svedberg turned his attention to genetics and devised "Chromosomes." The color scheme is black on dove-grey linen with white stripes. A textile artist, Viola Grasten, gave the scientist some assistance, but the design is Prof. Svedberg's.

Prof. Svedberg, who is called The for short, was born in 1884. He became professor in physical chemistry in 1912 at the University of Uppsala, but resigned in 1949 to found the Gustav Werner Physics Institute in Uppsala, of which he is the present head.

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PALEONTOLOGY

Crocodiles on Celebes In Pleistocene Era

► **THE FIRST** evidence that crocodiles roamed the island of Celebes at the time of the very early development of man on earth is reported by Dr. D. A. Hooijer.

Dr. Hooijer based his finding on two fossilized denture bone fragments found in Pleistocene formations in southwest Celebes, an island off the east coast of Borneo. Comparison with specimens in the Museum of Natural History in Leiden, Holland, showed the fossils to be from a crocodile. However, Dr. Hooijer noted an irregular arrangement of the teeth.

This may be an indication that the bones are from an unknown species, but Dr. Hooijer believes the tooth formation is merely a peculiarity of this single specimen.

The findings are reported in *Copeia* (Oct. 29).

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METEOROLOGY

National Disaster Research Institute

► **A PROPOSAL** to set up a National Disaster Research Institute was presented to the American Meteorological Society meeting in Miami Beach, Fla., by Rollins H. Mayer of the Patrick Air Force Base, Fla.

Such an institute would cost but a small fraction of the money lost from tornado and hurricane damage, Mr. Mayer said. The savings in lives and property would be considerably more than its operating costs.

The institute would have three main purposes. It would initiate basic research leading to a better understanding of the causes of hurricanes and tornadoes. It would encourage immediate application of recently developed ideas. It would serve as a national warning network for all kinds of disasters, including possible bombings.

Mr. Mayer's plans call for the institute to be controlled by an executive board, with members representing such government agencies as the Weather Bureau, the Navy and Air Force, Civil Defense, the Federal Communications Commission and the National Science Foundation.

The institute, however, would be non-governmental, although Mr. Mayer foresees that most of the money for its support would come from the various government agencies involved.

The meteorologists are expected to decide about authorizing a committee to investigate the potentialities of such an institute at their January meeting in New York.

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TECHNOLOGY

Carbon Filter Devised For Industrial Vapors

► **AN APPLICATION** of the gas mask principle has been made to filter out odors and recover valuable vapors from hot industrial exhausts.

The process, now available commercially, uses activated carbon, known for centuries for its almost instantaneous purifying action. Two major obstacles to carbon as an industrial filter were overcome.

Since the substance will not act efficiently on hot, damp exhausts, the new device mixes cooler air with the fumes before they enter the filter. The problem of regenerating the carbon is solved by periodical heating of the filter.

The gases collected by the second process can be condensed and separated for re-use. In some plants, millions of dollars worth of costly chemical solvents, which could be reclaimed by the new filter, escape up the chimney.

The Siftaire, manufactured by the Chemurgic Process Corp., is based on patents of Dr. Frank L. Schneider, professor of chemistry at Queens College, New York.

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MEDICINE

Speed Mumps Recovery

Preparation of enzyme chemicals made by streptococcus germs swiftly reduces the painful gland swellings of mumps, as well as of other inflammations.

► A REMEDY to speed recovery from mumps apparently is at hand. It is a preparation of enzyme chemicals made by streptococcus germs.

Its effectiveness in swiftly reducing the painful swelling of the glands in a man with mumps was disclosed at Springfield, Mass., by Dr. Joseph M. Miller, chief of the surgical service, Veterans Administration Hospital, Fort Howard, Md.

The man with mumps was one of 64 patients who got the enzyme remedy in a trial of a new way to use it. The other 63 patients did not have mumps, but suffered from inflammations due to other infections and also from inflammations and swellings following tooth extractions, bruises, wounds and operations.

The inflammation and swelling were better by the end of the first day of treatment and completely gone by the end of the third day in the majority of the patients. The remedy's score was "excellent" in 45 patients, "good" in 15 and "failed" in four. Of these, three had advanced complicated conditions and one had insufficient treatment.

The remedy is called Varidase, trade name for the preparation of the two streptococcus germ enzymes, streptokinase and streptodornase. Varidase has previously been used by local application to dissolve blood clots and pus in some surgical conditions.

To overcome inflammation, it is given by injection into the muscles. It acts by breaking down the mechanical barrier that the body sets up in response to injury or infection. The barrier is composed of fibrin clots in the tissue spaces around the injured or infected area.

Formation of the barrier is the body's attempt to keep the infection or injury from spreading. Although useful, the barrier also keeps out helpful elements such as red and white blood cells and antibiotics or sulfa drugs.

When streptokinase is given, the barrier is dissolved and the blood cells and anti-germ medicines can get through.

Dr. Miller stressed that antibiotics or sulfa drugs must be given along with streptokinase to stop any germs in the inflamed area. Otherwise, breaking the barrier would allow germs to spread and thus harm the patient. The man with mumps got achromycin, an antibiotic, at the same time he received Varidase.

He was given the treatment for swollen glands under the chin before it was known that he had mumps. The glands on the sides of the jaws had not swollen, but when he developed orchitis the second day, mumps

was suspected and a test confirmed the diagnosis.

This patient had been one of a group getting streptodornase, chemically freed of streptokinase.

"Dornase," as it is called for short, did not help him or any of the other patients getting it. The mumps patient was then given the two enzymes together, along with the antibiotic, and within three days was practically well.

Object of giving dornase alone was to see which of the two enzymes was the active part of the combination.

Kinase turned out to be the active one, but cannot at present be supplied without dornase, because the separation process for isolating pure kinase is so very costly.

A man with face mauled in a fight, another with swollen face and eye swollen shut from sinus infection, others with swellings and inflammation from cellulitis and from bone graft operations were among those helped by Varidase injections into the muscles.

The remedy shows promise also of preventing inflammation and swelling. This feature appeared in the case of a man who had to have many teeth extracted. Those on one side were removed first and his face became very badly swollen. Varidase promptly reduced this. So the remedy was given for three days before the teeth on the other side were extracted. Swelling was barely noticeable after that extraction.

Associated with Dr. Miller in the studies were Drs. John A. Surmonte and Milton Ginsberg of the VA hospital and Frank B. Ablondi of Lederle Laboratories, Pearl River, N. Y., manufacturers of Varidase.

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PSYCHOLOGY

Stop-Sign Violators Go Straight Ahead

► MOTORISTS HEADING straight through an intersection were the most frequent stop-sign violators in a traffic study in the Cook County area.

The investigation, reported by Leo G. Wilkie, showed that 11.2% of the straight-through traffic disobey stop signs, while only 6.4% of right-turning vehicles and 3.9% of left-turning vehicles fail to stop.

Straight-through violations in the morning rush hours accounted for 15% of all violations. More motorists failed to stop before turning in the morning rush than in the evening rush.

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SOLAR-POWERED BATTERY — Energy from the sun runs this midsize experimental radio transmitter, built by Edward Keonjian, General Electric engineer. It uses transistors and selenium solar energy converters, and has a range of about 100 feet.

PHYSICS

Tiny Radio Transmitter Powered by Sun's Rays

► THE SUN'S rays provide the power for a new experimental radio transmitter the size of a package of cigarettes.

The device, developed by Edward Keonjian in General Electric's Electronics Laboratory, Syracuse, N. Y., uses transistors instead of tubes and has a range of 100 feet. The transmitter is self-contained. When light hits the special selenium solar energy converters, enough current is generated to operate the device.

The range could be increased either by adding more selenium converters or using silicon or germanium instead of selenium.

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INVENTION

Bicycle Coupler For Dual Riding

► A MODERN version of the "bicycle built for two" allows a young lady to smile at and talk with her partner rather than sit and stare at the back of his head as grandmother used to do. James W. Reside of Racine, Wis., won patent No. 2,694,582 for a coupling device that he claims holds the cycles firmly parallel and, when passing over "irregularities" of the road surface, the coupling allows the two vehicles to ride at different levels.

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ARCHAEOLOGY

Oldest American Men

Radiocarbon dating of fragments of charcoal found in Nevada shows that man has been in America twice as long as previously supposed, more than 23,800 years.

► MAN HAS lived in America twice as long as scientists have supposed.

Radiocarbon dating of fragments of charcoal found beneath an ash bed at Tule Springs, Nevada, and believed to be of "human origin" has pushed back the dawn of human life on American soil to more than 23,800 years ago.

This date is included in a new compilation of radiocarbon dates issued by Prof. Willard F. Libby of the University of Chicago, now on leave to serve as a member of the Atomic Energy Commission, part of which appears in *Science* (Nov. 5).

Folsom Man, who hunted now extinct mammoths in America's Southwest and was long believed to be the first American, has been dated by the radiocarbon method at about 10,000 years ago. Tepexpan Man, Mexico's first resident and contemporary of Folsom Man, has been dated at between 10,000 and 12,000 years ago.

However, it now seems that man was living and perhaps cooking over a campfire in Nevada as much as 12,000 years before Folsom Man and Tepexpan Man were hunting their ancient elephant game.

The carbon sample was collected by Drs. Fenley Hunter and M. R. Harrington of Southwest Museum, Los Angeles.

Actually, the Nevada resident may have been much older. The antiquity of 23,800 years given by Dr. Libby for the Tule Springs sample is close to the limit of his radiocarbon dating method, so that he can only give the date as "older than 23,800." No one can now say how much older it may be.

Fresh confirmation of the Spinden correlation for relating dates in the ancient Mayan calendar of Guatemala to our own calendar is included in Dr. Libby's list.

For a long time, scientists disagreed about how to interpret Mayan dates according to our calendar. One ancient door frame in Guatemala had a Mayan date carved into it. According to the method developed by Dr. Herbert J. Spinden, the date by our calendar would be Oct. 30, 481 A.D.

According to the other method worked out by Drs. J. T. Goodman and J. Eric Thompson, the date would be June 30, 741 A.D.

In November, 1951, Dr. J. L. Kulp of the Lamont Geological Laboratory found by radiocarbon dating that the correct date was 481 A.D., thus confirming the Spinden correlation. Now Prof. Libby has found a radiocarbon date for another door frame from Guatemala bearing the same Mayan date. His result is a little different from that of Dr. Kulp, but even older. He obtained a date of 451 A.D., with a possible error of plus or minus 110 years, furnishing fresh confirmation of the Spinden correlation.

Great antiquity was confirmed for a skull found in Florisbad, Orange Free State, South Africa, by another dating in the compilation. This was the dating of peat in which the skull was found. The sample was sent in by Dr. A. C. Hoffman, director of the National Museum, Bloemfontein, South Africa.

This skull has been judged by anthropologists, by other evidence, to be very ancient. The structure of the skull indicates that it is transitional between Neanderthal and Modern Man. It has been placed at middle Pleistocene or roughly from 100,000 to 300,000 years ago.

Prof. Libby's radiocarbon dating confirms that it is very old, but again limits of the scale make it impossible to say exactly how old, so the verdict is "older than 41,000 years."

Science News Letter, November 27, 1954

ENGINEERING

How to Stop Freezing Of Plumbing Vents

► IF THE temperature drops below 10 degrees for several days, you may find sewer odors filtering into your house. Ice, which seals the roof vent of your plumbing system, is the cause.

The National Bureau of Standards has made an exhaustive study of the problem and has arrived at the following conclusions:

1. Shortening the exposed pipe is the most effective way of reducing or preventing closure.
2. The use of hot water, especially at night, increases the possibility of the pipe being blocked by frost.
3. The larger the diameter of the vent, the less likely is complete closure.
4. A house trap, which prevents moist, warm sewer air from passing up the pipe, is suggested.
5. Less trouble is encountered when the vent is on the sunny side of the roof.

Roof vents are necessary to equalize pressure in the drainage system. When the opening is sealed, pressure may build up. Air in the plumbing system may then be forced into the house. Roof vents have caused considerable trouble in the northern states and in Canada.

The complete analysis is presented in the Department of Commerce booklet, "Frost Closure of Roof Vents in Plumbing Systems."

Science News Letter, November 27, 1954



PURIFYING ACTH—To determine the structure of beta ACTH, 4,130,000 separate extraction operations were performed by this countercurrent distribution machine from which Miss Katherine Howard, a member of the research team, is withdrawing a sample. Using the device, ACTH was fractionated into its eight components. (See p. 351.)

ORNITHOLOGY

Bellbird's Nests and Egg Found for the First Time

► THE FIRST nests and the first egg of Trinidad's black-winged bellbird have been discovered in Trinidad.

Named 137 years ago by Georges Cuvier, famous French naturalist of the 18th and 19th centuries, the "bird with the fleshy beard" has managed to hide its nest, eggs and mating habits all this time.

The first nest was found by Dr. William Beebe, director emeritus of the department of tropical research of the New York Zoological Society, in Trinidad's tropical forest. Its discovery is described in *Animal Kingdom* (July-Aug.).

Dr. Wilbur G. Downs, director of the Trinidad Regional Virus Laboratory, discovered a second nest and the first egg of the black-winged bellbird 53 days later.

The bellbird, a native of Trinidad, has been identified as the bird with the fleshy beard because it has string-like outgrowths hanging from its throat. Similar bellbirds are found in British Guiana, Venezuela, Colombia and northern Brazil.

Science News Letter, November 27, 1954

PHYSICS

Atomic Tests Could Poison World's Air

► WITH GROWING apprehension that the gradual build-up of atomic debris from H- and A-bomb explosions will poison the world's atmosphere, a limitation on the test explosions conducted is being suggested.

It is probably not realistic to suggest that the United States, Russia and other countries should refrain from atomic explosions altogether. An agreement of this sort would be as unlikely as a compact to abandon atomic weapons.

A possibly practical idea was put forth by Dr. Pierre Auger, French physicist and head of the natural science section of the United Nations Educational, Scientific and Cultural Organization in Paris. Dr. Auger was French delegate to the United Nations Atomic Energy Commission.

En route to the UNESCO meeting now in progress in Montevideo, Dr. Auger suggested that the atomic powers might agree to limit their atomic "shots" in the interest of not creating too much radiation in the earth's air.

The United States and Russia, for instance, might limit each year their tests to ten each, Britain might have a quota of three, France two or so, and so forth. This would not create too much of a hazard, in Dr. Auger's opinion.

If tests are fired repeatedly without regard to the radiation danger, we may drift into a pollution of the air that it will be impossible to remedy.

Some of the debris of atomic explosions is very long-lived, as long lasting almost as natural radium and uranium. It goes on giving off radiation for thousands of years.

Other new elements manufactured in the gigantic blasts are shorter lasting and more intense.

From the standpoint of poisoning the world, the radioactive materials that explode over a few years are equally important. How many bombs exploded in a short time would be dangerous to the whole world is problematical, perhaps as few as 100, perhaps more.

These widespread effects are not the same as the direct radiation effects of the explosion. They are less immediate and more insidious.

Science News Letter, November 27, 1954

PHYSICS

Computer Used to Probe Protein Structure

► THE MANIAC, an electronic computer at Los Alamos Scientific Laboratory, is being used to learn more about protein structure, two scientists revealed at the National Academy of Sciences meeting in New York.

The computer "builds" artificial protein molecules at random from any of the 20 different amino acid building blocks, according to a specified code. The proteins resulting from the machine's computations are compared with those found in nature, Prof. George Gamow of George Washington University, Washington, and Dr. N. Metropolis of Los Alamos Scientific Laboratory, N. M., reported to the nation's top scientists gathered at Columbia University for their autumn meeting.

The two scientists are studying protein structure because they believe that the specific composition of each protein is determined by the particular order of the amino acids of which it is formed.

Science News Letter, November 27, 1954

VETERINARY MEDICINE

Sheep Disease Battle Won by Scientists

► A SEVEN-YEAR fight to rid the United States of scrapie, a deadly sheep disease, may have been successfully completed with the destruction of 117 infected sheep in Ohio.

The U. S. Department of Agriculture has reported that the destroyed animals represented the last known source of the disease in this country.

Scrapie is a virus that attacks sheep under about 18 months of age. Symptoms of scrapie start with a violent trembling of the ears, limbs and lips of infected animals. The trembling is followed by itching, a loss of weight and finally, the animal succumbs. There is no known cure.

The Agriculture Department cautioned, however, that the disease has a three-year incubation period in which no symptoms are evident. For this reason, it will be some time before it is known if the past years' quarantine and eradication program have been totally effective.

Science News Letter, November 27, 1954

IN SCIENCE

MEDICINE

Electronic Machine Aids Circulation Diseases

► AN ELECTRONIC machine for aiding victims of small blood vessel disease, such as the Buerger's disease that attacked the late King George VI of England, was shown to doctors at the Southern Medical Association meeting in St. Louis.

The machine was developed by Dr. James F. Lyons of Miami, Fla. He reports that it shows promise of opening up new collateral blood vessels in feet or hands where lack of blood supply due to stopped blood vessels threatens gangrene.

He describes the machine and its operations as follows:

"Each pulse wave from the heart is electronically timed, and at the right moment, is reinforced by externally applied pressure of short, measured duration and intensity. This external pressure forces blood through any small vessels still patent; and, by causing rhythmic dilation and contraction in them, it results in gradual, permanent, enlargement of these vessels."

Science News Letter, November 27, 1954

BIOCHEMISTRY

Try Speeding Up Rate Of Cancer Shrinkage

► SPEEDING UP the rate at which cancers shrink when deprived of the hormones they need for growth is being investigated by scientists at the Public Health Service's National Cancer Institute, Bethesda, Md.

Dr. Roy Hertz, chief of the Institute's endocrinology branch, reported these efforts to the Third Pan American Endocrinology Conference in Santiago, Chile.

When ovaries are removed from certain patients with breast cancer, Dr. Hertz said, the tumors shrink "remarkably and their progress is temporarily arrested." In males, removal of the testes causes a regression of cancer in the prostate gland.

These effects result from the fact that tumors of the breast and prostate gland need the same hormones for their growth as do normal tissues.

Dr. Hertz reported experiments, on laboratory animals, with various means of accelerating the shrinking process. Starvation, the feeding of special diets, vitamin B deficiency, exposure to cold and heat are among the methods already tried.

None of these have altered the shrinkage rate, Dr. Hertz has found. He hopes that further tests on laboratory animals will make it possible to find ways of speeding up the "already favorable effects seen in human patients after hormonal deprivation."

Science News Letter, November 27, 1954

CE FIELDS

CHEMISTRY

Mucic Acid Is Found In Peaches and Pears

► MUCIC ACID, a substitute for cream of tartar in baking powder, has been isolated for the first time from fresh fruit.

The only other known natural occurrences of the acid is in purified blood and in sugar beet juice.

From almost four and a half pounds of ripe peaches or pears, only a tiny trace, approximately one-tenth of a gram, was isolated by E. F. L. J. Anet and T. M. Reynolds in New South Wales, Australia.

Their report, in *Nature* (Nov. 13), indicated that apricots, passion fruit and blackberries also contain mucic acid.

The method of isolation makes it almost certain that the acid, a white, crystalline oxidation product of milk sugar, was present in the fruit in a natural state.

Science News Letter, November 27, 1954

PHYSIOLOGY

Taste and Sniff to Detect Impurities

► TRAINED TASTERS and sniffers can track down impurities in packaged food. The human tongue and nose are in many cases the only effective tools for isolating off-tastes and off-odors.

L. C. Cartwright, director of product evaluation for Foster D. Snell, Inc., New York, said, "Some pollution is of such low concentration that chemists not only do not know where to start in their analysis, but also find that their tests are not sensitive enough."

Mr. Cartwright and his associate, Patricia H. Kelley, reported to the sixteenth annual Packing Institute Forum in New York recent successes with the taste-smell method.

Educated palates have traced the strange taste of a shipment of Scotch whisky to the sherry barrels in which the liquor was aged.

The "phenolic" taste in a certain brand of coffee turned out to be créosote. Detective work showed that the flooring of the warehouse where the green beans were stored was giving off the contaminating chemical.

The "medicinal" taste of a liquid sugar product was found to be caused by small deposits of tarry material in the crevices of the 55-gallon shipping drums.

Mr. Cartwright said the interest in application of the taste-panel method has increased greatly in the past ten years. His tasters have been working on from five to 20 contamination problems simultaneously in past months.

The panels, usually consisting of from five to ten members, are presented with code-

marked samples in the tests. In repeat tests, the code labels are changed. This serves, he said, to eliminate panelists whose reports are inconsistent and to recheck accuracy of first judgments. Supplementary chemical analysis is used when feasible.

No correlation is found between sex and acuteness of sensory organs, but experiments seem to show that "technically trained people are better panelists."

"It is not that the scientifically minded have better taste buds," Mr. Cartwright said, "but they do have a stronger motive to judge correctly and they are better in verbalizing their perceptions."

Science News Letter, November 27, 1954

PUBLIC HEALTH

Unlighted Gas Jets Blamed for Deaths

► PEOPLE TURN on gas jets without lighting them. That is a common cause of accidents involving gas poisoning which take about 1,400 lives annually in the U. S.

Metropolitan Life Insurance Company statistics show that more than half the accidental gas poisoning fatalities in and about the home involve gas ranges or gas heaters.

Other leading causes of gas poisoning include leaky connections or other defects of cooking or heating equipment, incomplete combustion in gas stoves or heaters in poorly ventilated rooms, and running automobile motors in closed household garages.

In the gas poisoning accidents that occur outside the home, automobile exhaust fumes were the leading cause of death. Cars or trucks parked on streets or highways with the motor running accounted for many of these fatalities.

Science News Letter, November 27, 1954

MEDICINE

Stomach Acidity Found By Chemical Method

► AN EASIER and safer method of determining whether there is acid in the stomach has been devised by Dr. A. A. Goldbloom of New York Medical College.

Ordinarily tests for stomach acidity are made by having the patient swallow a long rubber tube. Stomach juices are aspirated through this for chemical analysis.

With the new method, the patient swallows a cation exchange indicator called quininin. When in the stomach in the presence of acid, this chemical forms a compound that is excreted by the kidneys and causes fluorescence of the urine.

If there is no acid in the stomach, there will be no fluorescence.

At the National Gastroenterological Association's meeting in Washington, Dr. Goldbloom reported use of this test on 95 patients aged 80 to 100 years for whom swallowing a stomach tube would be hazardous. About a third of so-called normal aged people, the test showed, have no acid in their stomachs.

Science News Letter, November 27, 1954

NUTRITION

Vegetable Color Is Clue to Value

► REMEMBER to include green vegetables in your daily meals. They are important because of the nourishing factors they contribute, particularly vitamin A and vitamin C, and they are good sources of minerals.

The intensity of the vegetable's color and the part of the plant from which it comes are clues to its food value, nutritionists of the U. S. Department of Agriculture say.

In general, they state, the greener the vegetable the richer it is in vitamins and minerals. Dark-green leaves may carry several times as much of some nutrients as green stalks (asparagus), green fleshy pods (snap beans), or green immature seeds (shelled peas or lima beans).

In a new bulletin, "Green Vegetables for Good Eating," the nutritionists give many pointers and recipes.

Cook green vegetables quickly for best quality, they advise. Use a cover on the pan to speed cooking, and cook until vegetable is just tender and still slightly crisp. Long cooking makes the vegetables limp, and changes color and flavor.

Science News Letter, November 27, 1954

PHYSIOLOGY

Teen-Agers Need Sleep

► WHEN JUNIOR and Sister reach their teens, it is difficult for Mother and Dad to enforce early bedtime. Home work, parties, other activities crowd days and evenings.

The teen-agers feel so grown up that they will often resist an early bedtime even when sleepy and tired.

The sleep of the adolescent, however, is important, for it, as much as his food, is the basis for his general well being, advises the U. S. Children's Bureau.

A good rule is to have bedtime early enough so that the child, even in his teens, does not have to be waked in the morning.

The advice is contained in the Children's Bureau's new booklet, "The Adolescent in Your Family."

Adolescents should have a chance for all the rest and sleep they will take. Any adolescent who seems "lazy," sleeps "too much," or doesn't seem to build up energy from the rest he gets has something wrong with him, and what it is, physical or emotional, needs to be discovered.

Teen-agers often exasperate their parents by seeming to have plenty of energy for the things they want to do, and to be "too tired" when asked to do something they feel no enthusiasm about.

No wonder boys and girls have these spurts of energy and corresponding periods of lackadaisical flopping. They are likely to do what they do so hard that they really do have periods of exhaustion. Fatigue can be forgotten while something exciting is going on, and only really felt later.

Science News Letter, November 27, 1954

ASTRONOMY

Jupiter Now Shines in East

Winter constellations visible in the southeast. Great Square of Pegasus, visible in south, is good guide from which to find other star groups.

By JAMES STOKLEY

► AS IF to take the place of Venus, the brilliant planet that shone in the western sky until a month ago and has now become a morning star, Jupiter has come into view.

Jupiter's position is shown on the accompanying maps, which depict the appearance of the skies about 10:00 p.m., your own kind of standard time, at the beginning of December, 9:00 p.m., at the middle of the month and 8:00 p.m. as it comes to a close.

Jupiter, in the constellation of Cancer, the crab, just below Gemini, the twins, is of magnitude minus 2.1 on the astronomer's brightness scale.

This is not as bright as Venus but, with that one exception, it is brighter than any other nighttime star or planet. It rises about three hours after sunset, and remains visible the rest of the night.

Mars is still with us, to the southwest, in Aquarius, the water-carrier, and sets about 10:30 p.m. It has faded greatly from its brilliance last summer, but still equals a bright first magnitude star. Of magnitude 0.7, it is less than a seventh as bright as Jupiter.

Visible now in the southeast is that array of constellations that make the winter evening skies so brilliant.

Orion Is Familiar

Most familiar of these groups is Orion, the warrior, easily recognized by the three stars in a row that form his belt. Above and to the left is Betelgeuse, in one shoulder, while to the right is Rigel, in one of his legs.

Just below Orion is Canis Major, the great dog, with Sirius, the dog-star. To the left we see the other dog, Canis Minor, with the star called Procyon.

Above Orion is Taurus, the bull, with first-magnitude Aldebaran, the brightest star, marking the animal's eye. Moving to the left from Taurus, we come to Auriga, the charioteer, with the bright Capella.

Below these are the twins, Gemini, with Castor and Pollux, the latter of the first magnitude. And just below these, as mentioned above, is Cancer, the crab (not shown on the maps), in which Jupiter shines so brightly.

Two other first magnitude stars—Deneb, in Cygnus, the swan, and Vega, in Lyra, the lyre—are seen low in the northwest.

Because they are so low, they are considerably dimmed from their brightness a

few months ago, when they shone high overhead.

As mentioned above, Venus has become a morning star, shining in the east in the constellation of Libra, the scales, before sunrise. On Dec. 21, it reaches greatest brilliance, with magnitude minus 4.4, about three and a third times as bright as Jupiter.

Near Venus, also in Libra, is Saturn, which is about the same brightness as Mars.

On Dec. 22, at 4:25 a.m., EST, the sun is farthest south. This is called the winter solstice, since it marks the beginning of winter in the Northern Hemisphere. In southern countries, however, it is the summer solstice, for summer starts at that time south of the equator.

Although it contains no stars of the first magnitude, the constellation of Pegasus, the winged horse, now visible in the southwest and west, is a good one to know.

Great Square of Pegasus

In this group are four stars in a square and, therefore, it is known as the "Great Square of Pegasus," even though the upper most one (for the square now rests on one corner) is Alpheratz, in the neighboring group of Andromeda.

She was an ancient princess, according to the mythological story, who was chained to a rock and left there to be devoured by a great sea monster. The monster is seen to the south, as the constellation of Cetus, also called the whale.

However, she was rescued by the hero, Perseus, depicted in the constellation that stands directly overhead, and in which is a famous variable star, called Algol.

This decreases considerably in brightness every 2 days 21 hours, as an invisible and darker companion comes in front of the brighter star and partially eclipses it.

The Great Square makes a good guide from which to find other groups. A line downward from the two stars on the western side leads to Aquarius, the water-carrier, while one extended to the east from the two southernmost stars brings you to Aries, the ram, which is just above the head of Cetus.

This part of the sky, many thousands of years ago, was the location of the vernal equinox, the place where the sun stands at the beginning of spring.

At present, this place is in the constellation of Pisces, the fishes, which stands between Aries and Aquarius, just south of the square.

Equinoctial Point Moves

Because of a slow movement in the sky, called "precession of the equinoxes," the equinoctial point moves completely around the sky in about 26,000 years.

The month of December brings an eclipse of the sun on Christmas Day, but one that is nearly as far away from the United States as it could be. This is an "annular" eclipse, i.e., one that occurs when the relative distances of the sun and moon are such that the lunar disc does not completely hide that of the sun.

Instead, from places where the eclipse is seen at its height, one will see the dark disc of the moon surrounded by a ring of the sun.

It is from the Latin name for ring, "annulus," that this kind of eclipse gets its name of annular.

The path along which it will be seen crosses the South Atlantic Ocean, South Africa, the Indian Ocean, and ends near the island of Timor, north of Australia. Over a larger region, including Australia and part of Antarctica, there will be a partial eclipse.

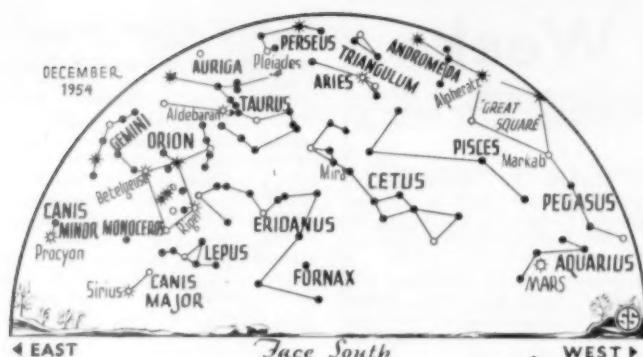
Celestial Time Table for December

Dec. EST

2 11:20 a.m. Moon passes Mars.

3 4:56 a.m. Moon in first quarter.





☼ * • • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

PUBLIC HEALTH

Carbon Monoxide May Be Cause of Many Accidents

► LEAKAGE OF carbon monoxide from engines may be the reason for many accidents caused by drowsy, inattentive drivers, the California Highway Patrol has found.

The deadly gas was present, in concentrations described as above the safety limit, in 30 of 1,007 cars inspected.

Carbon monoxide is produced by the partial combustion of gasoline in the engine and can cause drowsiness, dizziness and headaches when present in small amounts.

Opening windows seems to be no safeguard against carbon monoxide in cars. The report notes that the gas may be drawn into the cars by the suction of air.

Science News Letter, November 27, 1954

- 8 9:00 p.m. Moon nearest, distance 222,700 miles.
 9 7:56 p.m. Full moon.
 10 3:57 a.m. Algol at minimum brightness.
 12 early a.m. Meteors visible radiating from Gemini.
 4:44 p.m. Moon passes Jupiter.
 15 9:35 p.m. Algol at minimum.
 16 9:21 p.m. Moon in last quarter.
 18 6:24 p.m. Algol at minimum.
 21 4:00 a.m. Moon farthest, distance 252,300 miles.
 4:00 a.m. Venus at greatest brilliancy.
 10:30 a.m. Moon passes Saturn.
 2:46 p.m. Moon passes Venus.
 22 4:25 a.m. Sun farthest south, winter begins in Northern Hemisphere.
 25 2:33 a.m. New moon; annular eclipse of sun visible in vicinity of Indian Ocean.
 31 6:40 a.m. Moon passes Mars.
- Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, November 27, 1954

CHEMISTRY

Pattern for Insecticide Found in Plant Study

► BY TAKING apart the insect-destroying principle extracted from the pyrethrum plant, British scientists may be able to make still stronger insecticides.

Understanding the chemical differences that make one substance made from pyrethrum highly poisonous to insects while another harms them much less may point the way to better insecticides, states Dr. L. Crombie of the Imperial College of Science and Technology, London. He describes, in *Nature* (Oct. 30), his work with pyrethrum, a plant known to medicine since the time of Dioscorides.

In addition to pellitorine, the previously known extract not strongly poisonous, Dr. Crombie has obtained a new substance, anacyclin, from which he has produced an insect poison.

Knowing the chemical structure of these pyrethrum products, he believes their differences show the direction in which they can be modified to make artificially insect killers more potent than the original plant.

Science News Letter, November 27, 1954

Where do Ideas come from?

How are ideas created? What role does the unconscious play? Are ideas best developed through word-reasoning, mathematical reasoning, or visualization? Why has Poincaré's "forgetting hypothesis" proved such a powerful method for illuminating new ideas? How did Heilmholtz' "rest-hypothesis" help him? For just \$1.25 (a saving of 50% over the regular edition) you can own the book that answers these and many similar questions. This non-technical 156-page study—written by one of the fore-

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

THE AIRCRAFT RECOGNITION MANUAL—C. H. Gibbs-Smith—Putnam (John de Graff), new ed., 239 p., illus., \$2.50. Photographs, descriptions and "sillographs" to aid in the popular hobby of airplane spotting.

A FIELD GUIDE TO ANIMAL TRACKS—Olaus J. Murie—Houghton Mifflin, Peterson Field Guide Series, 374 p., illus., \$3.75. A lavishly illustrated pocket guide enabling you to identify the animal you did not see, and also to learn quite a bit about his habits.

FLIGHT INTO SPACE: The Facts, Fancies and Philosophy—Jonathan Norton Leonard—New American Library, 185 p., paper, 35 cents. Originally published by Random House, this is a non-technical account of man's attempts to explore the universe beyond this earth.

FREEDOM FROM FEAR—Lester L. Coleman—Hawthorn, 285 p., \$3.95. A specialist in ear, nose and throat writes this book, motivated by the subtle evidence of fear and anxiety in his patients.

THE GENETICS OF PARAMECIUM AURELIA—G. H. Beale—Cambridge University Press, Cambridge Monographs in Experimental Biology 2, 179 p., illus., \$2.50. The ciliate protozoan discussed here is an insignificant and harmless microbe, common in ponds and streams the world over, which has risen to distinction for the aid it has given to the study of genetics.

HI-FI HANDBOOK: A Guide to Home Installation—William J. Kendall—Crowell, 164 p., illus., \$2.95. Presenting the basic facts on physics and electronics, mastery of which will make it possible for the music lover to rig up his own music system in the home.

ISOTOPIC GAS ANALYSIS FOR BIOCHEMISTS—R. F. Glascock—Academic, 247 p., illus., \$5.80. A manual for practical use in the laboratory in connection with the new techniques utilizing radioactive isotopes, especially of carbon and hydrogen.

THE LANGUAGE OF TAXONOMY: An Application of Symbolic Logic to the Study of Classificatory Systems—John R. Gregg—Columbia University Press, 70 p., \$2.50. Suggesting that symbolic logic would be a useful tool in the development of a means of expression in methodological taxonomy.

LISTS RELATING TO ACCIDENT EQUIPMENT, AUTOMOTIVE EQUIPMENT, BURGLARY PROTECTION

EQUIPMENT—Underwriters' Laboratories, 127 p., illus., paper, free upon request to publisher, 207 E. Ohio St., Chicago 11, Ill. To aid the consumer to select safe equipment and to use it correctly.

LOTS OF KNOTS — LOTS OF FUN: New Easy Picture System to Learn Knot Tying—Robert Jay Carter—Carter Toy Co., 32 p., illus., paper, 50 cents. Clear, humorous drawings make even complicated knots easy to tie.

LOW TEMPERATURE TEST METHODS AND STANDARDS FOR CONTAINERS—Earl C. Myers and Norbert J. Leinen, Eds.—Advisory Board on Quartermaster Research and Development, 126 p., illus., paper, free upon request, by those concerned with research in packaging, directly to Quartermaster Food and Container Institute for the Armed Forces, 1819 West Pershing Road, Chicago 9, Ill.

MANUFACTURE AND APPLICATION OF LUBRICATING GREASES—C. J. Boner—Reinhold, 977 p., illus., \$18.50. Describing the composition, properties and uses of lubricating greases, and reviewing recent developments in the field.

A METHOD FOR THE MEASUREMENT OF ATMOSPHERIC OZONE USING THE ABSORPTION OF OZONE IN THE VISIBLE SPECTRUM—Oliver R. Wulf and James E. Zimmerman—Smithsonian, 14 p., paper, 25 cents. Presenting an analytical method.

NATURE FUNBOOK—Gerald M. Straight—Hart, 159 p., illus., paper, \$1.25. Quizzes, puzzles and amazing facts to teach the child from nine to 14 more about nature.

NEW HORIZONS IN CREATIVE THINKING: A Survey and Forecast—R. M. MacIver, Ed.—Institute for Religious and Social Studies (Harper), 159 p., \$2.00. A group of intellectual leaders look from many distinct points of view at our changing scene, in this series of luncheon addresses.

THE OCEAN FLOOR—Hans Pettersson—Yale University Press, 181 p., illus., \$3.00. Based on the recent Silliman Lectures by this Swedish oceanographer.

ORDNANCE: Government-Owned Inventions Available for License—Government Patents Board—Office of Technical Services, Patent Abstract Series, No. 6, PB 111469, 58 p., paper, \$2.00. Describing 644 inventions.

THE PHYSIOLOGY OF INSECT METAMORPHOSIS—V. B. Wigglesworth—Cambridge University

Press, Cambridge Monographs in Experimental Biology No. 1, 152 p., illus., \$2.50. Experimental evidence indicates that metamorphosis is controlled by a hormone secretion of a gland activated by a factor produced in the brain.

PREHISTORIC STONE IMPLEMENTS OF NORTHEASTERN ARIZONA: Reports of the Awatovi Expedition, Report No. 6—Richard B. Woodbury—Peabody Museum, Papers, Vol. XXXIV, 240 p., illus., paper, \$7.50. Reporting cultural changes over a period of continuous occupation of about 1,200 years.

PRINCIPLES OF BIOCHEMISTRY—Abraham White, Philip Handler, Emil L. Smith and DeWitt Stetten Jr.—McGraw-Hill, 1117 p., illus., \$15.00. Presenting an introduction to this science for medical students and others concerned primarily with mammalian biochemistry.

RENAL FUNCTION: Transactions of the Fifth Conference, October 14, 15, and 16, 1953, Princeton, N. J.—Stanley E. Bradley, Ed.—Josiah Macy Jr. Foundation, 218 p., illus., \$3.75.

RESEARCH ON LABOR MOBILITY: An Appraisal of Research Findings in the United States—Herbert S. Parnes—Social Science Research Council, 205 p., paper, \$1.75. A stocktaking of past research on this topic.

SCIENCE FOR WORK AND PLAY—Herman and Nina Schneider—Heath, 154 p., illus., \$1.68. Introducing first graders to the world of science with good color pictures. No reading is required until you reach page 64.

SCIENCE FUNBOOK—Gerald M. Straight—Hart, 159 p., illus., paper, \$1.25. Addressed to boys and girls from 10 to 15, this book contains stories, puzzles, quizzes and simple experiments.

STRUCTURE OF MOLECULES AND INTERNAL ROTATION—San-ichiro Mizushima—Academic, 244 p., illus., \$6.00. The professor of physical chemistry at the University of Tokyo writes on a subject in which he has specialized.

STUTTERING: A Psychodynamic Approach to its Understanding and Treatment—Dominick A. Barbara—Julian, 304 p., \$5.00. An attempt to correlate the late Karen Horney's theory of neurosis with the specific psychosomatic problem of stuttering. The author was guided by his own personal experience as a stutterer.

THE SYSTEMATIC POSITION OF LANTHANOTUS AND THE AFFINITIES OF THE ANGUINOMORPHAN LIZARDS—Samuel Booker McDowell Jr. and Charles M. Bogert—American Museum of Natural History, Bulletin, Volume 105, Article 1, 142 p., illus., paper, \$3.00. Comparison of the skull, tongue and external features of this rare reptile shows that although it has superficial resemblance to the beaded lizards of the U. S., it is really quite different.

TRANSACTIONS OF THE INTERNATIONAL ASTRONOMICAL UNION: Vol. VIII—P. Th. Oosterhoff, Ed.—Cambridge University Press, 887 p., illus., \$10.50. Proceedings of the Eighth General Assembly held at Rome, September 4 to 13, 1952. Some papers are in French and some in Italian.

VERTICAL SAND DRAINS—William S. Housel, L. A. Palmer and K. B. Hirashima—Highway Research Board, Bulletin 90, 37 p., illus., paper, 60 cents. Containing two papers presented at the thirty-third annual meeting January 12-15, 1954.

Science News Letter, November 27, 1954

Fifty percent of the total coffee imported into the U. S. is from Brazil.

Algae are found in heated pools at Yellowstone Park with a temperature of about 185 degrees Fahrenheit.

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ENTOMOLOGY

Flea Beetle Snubs Leaves With DDT Spray on Them

► IN ADDITION to combating DDT-resistant insects, scientists now have to contend with an insect pest that turns up its nose at leaves sprayed with DDT.

This unexplained ability of the flea beetle to tell which leaf has the DDT was exhibited in experiments conducted by Dr. James B. Kring, an entomologist at the Connecticut Agricultural Experiment Station, New Haven.

The scientist found that flea beetles in laboratory cages that contained both DDT-sprayed and unsprayed potato leaves invariably feed upon the untreated leaves.

Dr. Kring uncovered this unique insect ability while attempting to find the nature of the flea beetles resistance to DDT, which was once highly effective in controlling this important potato pest. The Connecticut scientist also discovered that flea beetles feed much more heavily when the weather is warm.

In the meantime, newer insecticides, such as chlordane, dieldrin and endrin, have proved highly successful in preventing flea beetle damage to potatoes in other tests being conducted at the station.

Science News Letter, November 27, 1954

DENTISTRY

New Methods for Fitting False Teeth

► NEW WAYS to make false teeth fit better were reported at the meeting of the American Dental Association in Miami.

One way involves grafts of cartilage and blood vessels to build up sunken gum ridges. Patients who will benefit are those who have ridge bones damaged by disease of the gums and supporting tissues or by breakdown due to ill-fitting dentures.

Success with the method in laboratory animals has led to its trial on humans, though in these cases it is still too early to evaluate the method. It was reported by Comdr. C. H. Blackstone of the U. S. Naval Dental School, Bethesda, Md., and Comdr. Mack L. Parker of the U. S. Naval Operating Base at Kodiak, Alaska.

Second way to better-fitting false teeth involves study of the way the patient swallows and sucks. This method was reported by Dr. Russell W. Tench of York, Pa.

The swallowing and sucking actions of a baby, beginning in the first few hours of life, exert a great influence in guiding the erupting teeth that are to come later, Dr. Tench pointed out.

"Muscle function," he said, "plays an important role in the placing of teeth in natural dentition. The same muscle function can be used to determine where artificial teeth should be placed.

"Muscles do the chewing. Teeth are instruments employed by the muscles," he said.

Science News Letter, November 27, 1954

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MILITARY STRATEGY

Radar Planes Guard Our Pacific Flank

See Front Cover

► BESIDES EARLY warning radar networks, the United States is using airplanes to guard both its Pacific and Atlantic coasts as one element in its warning and interception systems.

Shown on the cover of this week's SCIENCE NEWS LETTER is a U. S. Navy early-warning Lockheed Super Constellation on such patrol duty.

The "shark fin's" hump and mushroom-shaped bottom bubble house the radar antenna that can pinpoint strange aircraft and ships. Heart of the flying ship is the combat information center from which especially trained Navy crews can detect intruders with their electronic instruments, and from which air fleet interception can be directed.

Announcement was made in September of a new element, the fourth in the complex warning and interception plan to guard the U.S. from attack.

It is DEW, for "distant early warning," a radar net across the Arctic wastelands of northern Canada and Alaska. Unofficial estimates are that it will cost \$1,000,000,000 to complete. It is intended to signal automatically the approach of enemy bombers over the polar regions several hours before they could reach target cities in this country.

The other two elements of the warning system are the Pinetree network along the Canadian-American border, which consists of radar warning systems and devices for controlling fighter-interceptors, and the mid-Canada line, north of the settled areas of Canada, which consists of warning devices designed at McGill University, Montreal.

Science News Letter, November 27, 1954

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Ferns

► LATE AUTUMN is a good time to pay attention to the ferns. We are kept pretty busy on our woodland rambles in spring and summer, and even during early autumn, trying to hold ourselves abreast of the rapid procession of blossoming things.

However, when frosts have laid waste the petals and crippled the insects that make them worth producing, then we can turn our attention to the lesser but older relatives of the flowering plants, now consigned to back seats by the hustling later plants.

The patient ferns have for the most part waited for us, too. Ferns do not shed their leaves as broad-leaved trees and bushes do. While some of them, like the maiden-hair and the bladderwort, may have withered

and curled beyond the possibility of examination, there are very many species that are true evergreens, holding up their tough, strong little leaf-blades dark green and alive even when buried deep in snow.

And there are others, like the royal fern and the spleen wort, that keep green in defiance of frost until really heavy cold weather strikes them, and then, though brown and dead, still hold their shapes well enough to be worth study.

Even when the vegetative leaves have all been struck down, there still remain those odd structures which many ferns produce—pre-Cretaceous analogues of flowers. "Fertile fronds," botanists call them; they bear clouds of spores that fly out like brown dust when you brush against them.

You will find these among the sensitive ferns and cinnamon ferns. Others, like the Christmas fern, fashion their fertile fronds like the non-sporulating sterile ones, except that on the backs of the leaflets—perhaps only the leaflets near the tip—we find the little brown dots where the spores are borne.

The ferns that we select for decoration are usually the sterile fronds, for the fertile ones are not so graceful, and many uninformed people think that the brown spore cases are a fungus.

The Christmas fern, being very firm in texture, is much used in holiday decoration, from whence comes its common name, much easier to remember than *Polystichum acrostichoides*, its real name. It grows best in well-shaded woodlands, preferring a spot near trees that shed their leaves rather than near evergreens. Indeed, full sunshine has been known to kill this plant.

Science News Letter, November 27, 1954

ENGINEERING

Auto Safety Belt

► AUTOMOBILE SAFETY belts have been recommended as a means of substantially reducing the nation's huge traffic death and injury toll, but experts warn that use of inferior belts may jeopardize the entire program.

Edward R. Dye, head of the Cornell Aeronautical Laboratory Industrial Division, heartily endorses the use of seat belts, but urges these check points for prospective buyers:

The so-called "loop strength" of the seat belt and buckle should be not less than 3,000 pounds. This belt would support a 200 pound man in a crash of 15g deceleration, a crash in which the belt would have to withstand a load 15 times the man's weight. A 15g deceleration is probably tops for a severe head-on crash.

The belt should be not less than two inches wide.

Only one person should use each belt. The belt should be anchored in a manner to transmit the full force of the belt's 3,000 pounds loop strength to the frame of the car.

The belt from car attachment point to

hips should cross the pelvic region at an angle of approximately 45 degrees.

The belt should be worn with not more than four inches slack.

Mr. Dye considers these rules minimum requirements based on several years of automobile crash safety research at the Laboratory. His own automobile is equipped with safety belts for driver and passengers.

Science News Letter, November 27, 1954

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METEOROLOGY

A-Bomb Debris

► **RADIOACTIVE DEBRIS** from Nevada atomic bomb tests does not cause tornadoes, D. Lee Harris of the U. S. Weather Bureau in Washington reported to the American Meteorological Society meeting in Miami Beach, Fla.

His conclusion is based on a study of the location and time of occurrence of tornadoes compared with the location and time of occurrence of radioactive debris. It was made because the year 1953 saw both the longest series of atomic tests in Nevada and the most severe tornado year on record at that time.

More tornadoes were reported in 1954 than in 1953, although no atomic tests were held in the continental United States. Mr. Harris credited "great improvement" in reporting the whirlers for the new records set both in 1953 and 1954.

In 1953, 532 tornadoes were reported; over 600 have been reported so far in 1954.

Because the heavy tornado year and many atomic tests coincided in 1953, many people thought radioactive debris could have caused the severe season for whirlers.

In his study, Mr. Harris used as a standard maps for each month of the year showing where tornadoes have occurred between 1916 and 1950. To these, he compared maps of recent years showing tornado occurrences as well as location of atomic debris.

If radioactive debris caused tornadoes, there should be more of the whirlers in regions of heavy fallout.

There is little correlation between the location and time of occurrence of tornadoes and radioactive debris, he concluded. There is, he said, a "faint and probably insignificant suggestion that there is a tendency for tornadoes to avoid the region of most intense radioactive fallout."

Science News Letter, November 27, 1954

Questions

ARCHAEOLOGY—How long has man been in America? p. 343.

□ □ □

DENTISTRY—In what new ways can false teeth now be fitted? p. 349.

□ □ □

MEDICINE—How can recovery from mumps be speeded? p. 342.

□ □ □

SURGERY—What is the most recent development in spare parts for humans? p. 340.

□ □ □

VETERINARY MEDICINE—What is scrapie? p. 344.

□ □ □

CHEMISTRY—Why is it important to know the chemical structure of pyrethrum products? p. 349.

□ □ □

Photographs: Cover, Lockheed; pp. 339 and 342, General Electric Company; p. 341, Nordiska Kompaniet; p. 343, American Cyanamid Company; p. 352, H. C. Sweet Company.

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BIOCHEMISTRY

Chemists Cut Arthritis Drug into Eight Parts

► **ACTH, PITUITARY** gland hormone famous for its relief of painful, crippling arthritis among many other ailments, has been chemically cut up into eight equally active components, Dr. Paul H. Bell of a research division of the American Cyanamid Company announces in the *Journal of the American Chemical Society* (Nov. 5).

One of these, known as beta ACTH, can do everything ACTH can. This is the most abundant component of the hormone, contains 39 amino acids and has a molecular weight of 4,556.

The isolation and discovery of the chemical make-up of this part of the ACTH hormone is expected to lead to better understanding of ACTH, the adrenal gland and various diseases, though not necessarily to synthesis of the drug. (See p. 343.)

Science News Letter, November 27, 1954

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INVENTION

Typist Can Now Select Type Shade

► A **TYPIST** can now print a letter in either a light or dark shade without slowing the typing speed by merely pressing an added key. Thomas A. Sharp of Rowayton, Conn., has invented a device that controls the effective printing surface of type-writer type. It is an extra, shiftable ribbon of either clear or opaque material. He assigned patent No. 2,694,481 to Remington Rand, Inc., of New York, N. Y.

Science News Letter, November 27, 1954

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❁ **WASHABLE MOCCASINS** are being made for women and children out of a suede-like fabric that is finished with a man-made rubber coating. Cut from one piece and hand-laced, the moccasins are described as more resistant to scuffing and deterioration than ordinary leather moccasins.

Science News Letter, November 27, 1954

❁ **CRIB BUMPERS**, which mother can inflate, protect babies with a soft cushion of air. They are made of plastic that cleans easily and, when inflated, they are eight inches high and six and one-half feet long. Soft and flexible, the bumpers round out the sharp corners of cribs and playpens.

Science News Letter, November 27, 1954

❁ **FRUIT KNIFE**, designed for peeling citrus products, is imported from Germany. The blade is concave to permit easier separation of the meat from the rind. The serrated blade has a v-notch in its center that makes peeling easy.

Science News Letter, November 27, 1954

❁ **MARKING MACHINE** for lining football fields, tennis courts and parking lots is shown in the photograph. It has an addi-



tional two-wheel assembly on the barrel that allows it to mark straight lines faster. Deliberate steering of the retractable guide-wheel to right or left makes curved lines, and a slight lift of the handle raises the brush to allow skip lines.

Science News Letter, November 27, 1954

❁ **CARTRIDGE UNLOADER** for the marksman allows emptying without damaging bullet or case or losing powder. The hammerlike tool has a hollow head of shatterproof plastic into which the cartridge is inserted. A sharp tap or two releases the projectile into the hammer interior.

Science News Letter, November 27, 1954

❁ **WALKING DOLL** that is over two feet tall makes an ideal plastic playmate and playtoy. When its arms are lifted up and it is held by either hand, it walks. Like its real playmate, the doll can stand or sit, has eyes that open and close and hair that can be shampooed, combed or curled.

Science News Letter, November 27, 1954

❁ **FOLDING SCISSORS** made of stainless steel can either be carried on a key-chain or kept in a pocket leather case. Handy for the traveler, they are only one and one-half inches when folded. They open to three inches.

Science News Letter, November 27, 1954

❁ **TOOTHBRUSH CASES** shaped like ships of the navy are made of acetate plastic sheeting. "Upper decks" are bright solid colors, while the "hulls" are clear plastic to allow full view of the toothbrush. Junior mariners can float the container armada.

Science News Letter, November 27, 1954

CHEMISTRY for Christmas

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Do You Know?

Fishes, as well as ships, use the Suez Canal.

U. S. coffee imports in 1953 totaled 2,780,000,000 pounds.

Insulated wire in a modern transport plane would cover 16 miles.

With a solar engine that is only one percent efficient, 1,000 square feet of sunshine would give one horsepower.

A fish found in the hot springs of Ceylon lives in water at a temperature of more than 120 degree Fahrenheit.

Per capita milk production for the world, including the amount going into butter, is enough for only one quart of milk every three days for the world's population.

The comb jellies, or gooseberry jellyfish, common in American coastal waters, are unrelated to the typically umbrella-shaped true jellyfish, and do not possess stinging cells.